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**SOUTH GROUNDWATER CONTAMINATION
PLUME REMOVAL ACTION PART 1 ALTERNATE
WATER SUPPLY WORK PLAN FERNALD
ENVIRONMENTAL MANAGEMENT PROJECT
DECEMBER 1991**

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ENCLOSURE

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SOUTH GROUNDWATER CONTAMINATION PLUME

REMOVAL ACTION

2559

PART 1

ALTERNATE WATER SUPPLY

WORK PLAN

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

December 1991
Revision 1

Prepared by:

Westinghouse Environmental Management Company of Ohio
Cincinnati, Ohio

For:

The United States Department of Energy
Fernald Site Office

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I. INTRODUCTION

Operable Unit 5 - Environmental Media, of the Fernald Environmental Management Project (FEMP) Remedial Investigation/Feasibility Study (RI/FS), includes those environmental media that serve as migration pathways and/or environmental receptors of radiological or chemical releases from the FEMP. Important elements of this operable unit are the affected areas of the regionally important Great Miami Aquifer that exhibit elevated levels of uranium. Because of the location of portions of the uranium contaminated plume within sparsely developed areas south of the FEMP and the associated potential threat to human health, the Department of Energy (DOE) has initiated a removal action to address this area or "south plume". The removal action is being conducted in a manner consistent with the implementation of the final remedial action for Operable Unit 5.

The 1990 Consent Agreement, as amended in 1991, under Section 106 and 120(a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, (CERCLA) requires a work plan be submitted for implementation of the selected alternative for the South Groundwater Contamination Plume Removal Action. But, with the agreement between the United States Environmental Protection Agency (USEPA) and DOE over the Dispute Resolution concerning the Engineering Evaluation and Cost Analysis (EE/CA), The removal action has been divided into five parts:

- Part 1 - Alternate Water Supply
- Part 2 - Pumping and Discharge System
- Part 3 - Interim Advanced Wastewater Treatment System
- Part 4 - Groundwater Monitoring and Institutional Controls
- Part 5 - Groundwater Modeling and Geochemical Investigation

This work plan addresses the implementation of Part 1: the action involving the construction of an alternate water supply to selected receptors in the south plume area. All activities performed under this work plan will be in accordance with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) and consistent with OSWER Directive 9360.0-03B, Superfund Removal Procedures, Rev.3.

A Removal Site Evaluation (RSE) has been generated and approved by the DOE consistent with the requirements of the 40 CFR 300.410. Provided as an attachment to the Work Plan is a Health and Safety Plan completed pursuant to the requirements of the Consent Agreement and 29 CFR 1910.120.

II. DESCRIPTION

1.0 Removal Action

An Engineering Evaluation/Cost Analysis (EE/CA) has been prepared, in accordance with 40 CFR 300.415, to evaluate removal action alternatives and recommend the preferred alternative. The National Environmental Policy Act of 1969 (NEPA) requires that federal agencies include in their decision making processes appropriate and careful consideration of all environmental effects of proposed actions. The EE/CA was prepared to integrate the requirements of both the CERCLA and NEPA, and will be used by the United States Environmental Protection Agency (USEPA) and the DOE as the basis for remedy selection and implementation.

The preferred alternative, identified in the EE/CA, includes an alternate water supply to two currently affected industrial users, pumping with discharge to the Great Miami River, an interim advanced wastewater treatment system, enhanced monitoring, and institutional controls, and groundwater modeling and geochemical investigation. Providing an alternate water supply to two industrial users, Delta Steel and Albright & Wilson Americas Inc., (AWA) in the south plume area is Part 1 of the removal action. Part 2 of the removal action will be the design, construction, and operation of a recovery well field pumping system to extract uranium contaminated groundwater from the South Plume and discharge to the Great Miami River. The location of the recovery well field is proposed to be north of the industrial users (AWA and Ruetgers-Nease Chemical Co. Inc.) associated with the Paddys Run Road Site (PRRS). Part 3 of the removal action includes the installation of an interim advanced wastewater treatment system with a capacity to reduce the uranium in FEMP wastewater discharge to a level not to exceed 1700 pounds per year. Part 4 of the removal action is being implemented through the existing FEMP groundwater monitoring program in the south plume area. Part 5 of the removal action includes the geochemical field investigation (including hydropunching, soil vapor survey, additional monitoring wells installation, and monitoring well sampling) and groundwater modeling of the area adjacent and south of the recovery well field.

This work plan includes the plans for implementation of only the alternate water supply (Part 1) of the South Groundwater Contamination Plume Removal Action. The details of Parts 2, 3, 4, and 5 are discussed in separate documents and work plans. The fundamental objective of Part 1 is to protect public health by limiting access to and use of groundwater with uranium concentrations exceeding the derived concentration of 30 micrograms per liter ($\mu\text{g/l}$). To meet this objective, water supply wells and associated delivery systems, as outlined in Section III-4.0, will be provided to Delta Steel and AWA.

2.0 Related Actions

The following paragraphs include related actions other than those actions planned for implementation in Parts 2, 3, 4, and 5 of the South Groundwater Contamination Plume Removal Action. As mentioned previously, the details of Parts 2, 3, 4, and 5 are discussed in separate documents.

A storm water retention basin (SWRB) was constructed and placed into operation in October 1986 to intercept contaminated runoff from the FEMP production area. This runoff had previously flowed to Paddy's Run via the storm sewer outfall ditch. Construction of an additional chamber to the SWRB was completed in December of 1988. The expanded SWRB is designed to retain the runoff from a 10-year/24-hour rainfall event and therefore greatly reduces the contribution of storm water from the FEMP Production Area to Paddy's Run. This flow is estimated to be the major source of uranium contamination to the South Groundwater Contamination Plume.

The potentially responsible parties (PRP) of the PRRS, AWA, Ruetgers-Nease Chemical Co., Inc., and Mobil Mining and Minerals Co., have entered into an Administrative Consent Order with the State of Ohio to perform a RI/FS. Recent remedial investigation soil boring samples at the PRRS have shown high concentrations of various organic and inorganic compounds in addition to above background concentrations of the radioactive isotope potassium-40. The underlying groundwater has been determined during the PRRS RI/FS to be contaminated with inorganic and organic chemical compounds.

The additional following actions have been taken to date:

The public has been notified of the South Groundwater Contamination Plume. Well and cistern sampling in the south plume area has been performed by the Ohio Department of Health and the DOE.

An alternate water supply has been provided to a private residential well located along Willey Road in the northern portion of the plume.

An on-going groundwater monitoring program is being conducted for a number of wells in the south plume area. The results of the groundwater analysis are being reported to the well owners and the public.

Runoff from most of the surface of the FEMP waste storage area is collected and sent to the FEMP waste water treatment system. The remaining surface and perimeter runoff flows west and southwest to Paddy's Run. A separate removal action, Waste Pit Area Runoff Control, is currently underway by the DOE to address this remaining contaminated runoff and prevent it from flowing to Paddy's Run.

Integration of the RI/FS efforts has been initiated between the DOE and the PRPs to determine the contaminant levels of the PRRS in the area where the Part 1 pipelines will be located.

3.0 Integration with the Remedial Action

Following the initial testing period of each of the alternate water supply systems, the respective industrial user, Delta Steel and AWA will assume responsibility for operation, routine maintenance, and routine monitoring independent of the FEMP monitoring program outlined in the sampling and analysis plan. Each alternate water supply system will be operational during implementation of the remedial action for Operable Unit 5. The removal action will contribute to the efficient performance of the final remediation to the extent practicable. All design and construction activities associated with the removal action will be reviewed, and approved, by the Operable Unit 5 DOE Manager to assure consistency with the final remedial program.

III. Method of Accomplishment

1.0 Roles of the Participants

The DOE, as lead agency, will coordinate and execute this removal action.

The U.S. EPA reviewed and approved the EE/CA document pertaining to this action identifying the selected removal alternative for the South Groundwater Contamination Plume. U.S. EPA will review and approve this Work Plan. The Ohio Environmental Protection Agency (Ohio EPA) provides guidance and participates in the development and review of the EE/CA and Work Plan. The Ohio EPA will inspect and approve the alternate water supply well field in accordance with Ohio EPA guidelines prior to installing the test well and will independently analyze water samples from the test well. The Ohio EPA will also review and approve the water permit to install for the wells with no impact to the schedule.

The U.S. Army Corps of Engineers (COE), through an Interagency Agreement with the DOE, will obtain easements and property for the construction of an alternate water supply to two affected industrial users. The COE will also conduct an archaeological and historical resource survey for the areas affected by Part 1 for review and approval by the Ohio State Historic Preservation Officer.

Advanced Sciences Incorporated (ASI), as a contractor to DOE, is conducting the RI/FS program including activities such as groundwater sampling and development of a groundwater flow model for the south plume. ASI is also providing analytical support and groundwater modeling through their subcontractor, International

Technology (IT) Corporation. ASI/IT will install the test well and perform the pump test and sampling and analysis required to verify the technical requirements of the selected well field.

Westinghouse Environmental Management Company of Ohio (WEMCO), as the FEMP Operations and Maintenance contractor, is responsible to implement this removal action in a manner consistent with DOE and regulatory guidance.

A.M. Kinney, Inc. (AMK), as a contractor to WEMCO, is providing project design for Part 1 of the removal action.

Rust Engineering, as a contractor to WEMCO, will provide construction management for Part 1 of the removal action.

The contractor for Part 1 installation will be determined through the DOE bid and award process. As identified in the selected alternative, Part 1 will provide an alternate water supply to two industrial users, Delta Steel and AWA. These two industrial users will be key participants during the implementation of the removal action.

The PRRS PRPs (AWA, Ruetgers-Nease Chemical Co. Inc., and Mobil Mining and Minerals Co.) will integrate the available PRRS RI/FS data with the DOE to be incorporated in Part 1, if deemed necessary.

2.0 Additional Studies/Data Requirements

The specific water supply well locations for the alternate water supply to Delta Steel and AWA will be defined prior to completing the detailed design. A test well will be installed at the selected site to verify the technical requirements for the water supply.

3.0 Planning Activities

Activities that will be undertaken prior to the actual site work are planning, training, design, and management of the removal actions. These activities are required to render the area reasonably free of hazard to personnel and the environment until the RI/FS process has been completed and to determine if further action is required.

The following distinct engineering phases will be performed to provide the necessary definition for development of accurate scope, cost, and schedule documents:

a. Project Planning

Included in this activity will be the preparation of detailed task listings and delineation of responsibilities to support the Level IV schedule. The proposed project operation date is 126 calendar days after procurement of construction easements (excluding a 60-calendar day performance acceptance period), July 14, 1992, if no condemnation is required and the test well meets the stated technical requirements described in Section 4.0 of this document.

b. Access to Private Property

The FEMP will be required to obtain the necessary easements for the rights to private property to complete the alternate water supplies. The project operation date is contingent upon negotiation for the easement rights with the involved property owners. Figure 1 illustrates the proposed route for the piping from a proposed location of the water supply well locations to Delta Steel and AWA.

c. Design of Removal Action

Definitive design documents will be prepared for the removal action construction work.

d. Training of Personnel

All personnel working the construction phase of Part 1 of the removal action, will be trained in accordance with the Occupational Safety and Health Administration (OSHA) standards found in 29 CFR 1910.120.

e. Construction

All bid and award documents will be prepared for the removal action construction work along with the procurement of all equipment, materials and subcontractors necessary to complete the removal action construction work.

4.0 Field Actions

After the specific well locations for the alternate water supply for Delta Steel and AWA are defined, a test well will be installed and a pump test performed to verify that the well field has the quality of water and hydraulic capacity to meet the technical requirements. After the well field has been determined to be acceptable, one alternate water supply well will be installed for Delta Steel and two alternate water supply wells will be installed for AWA. Upon completion of the well installation, preliminary testing will be conducted on each well. The new water

supply wells are proposed to be located northeast of the intersection of Willey and Crosby Roads in an area with the approximate dimensions of 820 feet by 1250 feet. The dimensions of the well field have been selected based on Ohio EPA's standards for minimum isolation radius for each well. The well casing for Delta Steel shall be sized to supply 150 gallons per minute (gpm). Each of the two wells for AWA shall be sized to supply 175 gpm for single operation and 250 gpm when both pumps are operating in parallel. Each well will have an inlet screen whose depth, length, and size requirements will be determined during the initial testing of a test well used to confirm the quality of water and hydraulic capacity of the entire water supply well field. The top portion of the screen, at minimum, will be installed such that it will remain submerged during drawdown. Each well shall have a permanently mounted pump. Two underground water supply pipelines will run along the north side of Willey Road heading east from the well field, thence southeast along and just outside the western property line of the CSX railroad, thence south along the western edge of Paddy's Run Road to the locations of Delta Steel and AWA.

The AWA water supply system will operate for a period of 60 calendar days prior to the DOE turning over the system to AWA. This 60 day "initial testing period" will include confirmation of the system performance by AWA. The Delta Steel well and water supply pipeline will continue to be owned and operated by the FEMP until other future arrangements are agreed to by the parties involved.

5.0 Operations and Maintenance

An Operations and Maintenance Manual for Delta Steel and AWA will be prepared during the final design stage. Following the initial testing period of the AWA portion of the alternate water supply system, AWA will assume responsibility for operation, routine maintenance, and routine monitoring. As such, AWA will then be responsible for meeting all requirements set by the state of Ohio.

As stated above, the FEMP will continue to operate and maintain the Delta Steel portion of the alternate water supply system. The DOE will be responsible for meeting all the requirements set by the state of Ohio for the operation and maintenance of the Delta Steel system.

IV. **SAMPLING AND ANALYSIS PLAN**

SOIL

The pre-excavation field screening and soil sampling and analysis program for the monitoring of soils which will be disturbed in the suspect areas during construction is presented in Attachment I.

EXCESS EXCAVATED SOILS

Soils will be returned to the excavation from which they originate. Excess excavated soils at the AWA facility and associated drainage ditch will be the responsibility of the PRRS to manage and determine the appropriate disposal criteria. Excess excavated soils at the Paddys Run crossing will be the responsibility of the DOE to manage according to pertinent FEMP procedures.

WATER

At present, the FEMP Groundwater Monitoring Program monitors wells in the south plume area. The Delta Steel water supply well installed in Part 1 of the removal action will be added to the Monitoring Program.

OTHER INFORMATION

The additional sampling process for the alternate water supply will be in accordance with the FEMP Analytical Laboratories Quality Assurance Plan L.C.N. (QAP), October 1987, and its implementing procedures, and the Quality Assurance Project Plan (QAPP) approved as part of the RI/FS Work Plan. The certified laboratory results obtained from the QAPP sampling process will become part of the Administrative Record (AR).

The following table summarizes the sampling frequency and type of analysis during the Part 1 well siting. Well siting is the point after which the test well has been drilled and the field hydraulic capacity test has been completed. The initial testing period is the first sixty days of operation of the systems as defined in the agreement between AWA and the DOE. The continuous operations phase is the on-going period of time following the initial testing period. The table also reflects Ohio EPA involvement in the well siting sampling process:

| <u>Activity Siting</u> | <u>Users</u> | <u>Frequency</u> | <u>Plan</u> | <u>Analysis</u> |
|------------------------|--------------|--------------------|-------------|---------------------|
| Well Siting | A,B | Once/test well | QAPP | Table 1 HSL, RAD |
| Well Siting | A,B | Once/test well | OEPA | SDWA |
| Init. Testing | A,B | Daily | QAP | Table 1 |
| Init. Testing | A,B | Monthly | | QAPP |
| Cont. Oper. | A,B | State Requirements | OEPA | SDWA |

- NOTE: 1) User "A" is Delta Steel, User "B" is AWA
 2) SDWA = Safe Drinking Water Act
 3) RAD = Radiological
 4) HSL = Hazardous Substance List

The samples taken during the initial testing period will be in compliance with the QAP. These samples will also be in compliance with the approved WEMCO Environmental Compliance/Monitoring Procedures and sent to the FEMP Laboratory for analysis. Results will be included in the FEMP Annual

Environmental Monitoring Report. This report will be available for review in the Public Environmental Information Center. As stated in the Consent Agreement, if the DOE determines that any activities or work being implemented under this ~~part of the removal action which~~ may create an imminent threat to human health or the environment from the release or threat of release of a hazardous substance, pollutant, contaminant, or hazardous constituent, it may stop any work or activities for such period of time as needed to respond and take whatever action is necessary to abate the danger.

V. **HEALTH AND SAFETY PLAN**

The work to be performed will be consistent with the Health and Safety Plan prepared for this removal action. ~~A copy of this plan is provided as Attachment III of this work plan.~~ The plan identifies, evaluates, and controls all safety and health hazards. In addition, it provides for emergency response for hazardous operations. The plan is consistent with 29 CFR 1910.120 and the FEMP Site Health and Safety Plan. Safety documentation will be prepared according to FMPC-2116 Topical Manual "Implementing FEMP Policies and Procedures for System Safety Analysis and Review System" and DOE/OR-901 Guidance for Preparation of Safety Analysis Reports.

VI. **QUALITY ASSURANCE**

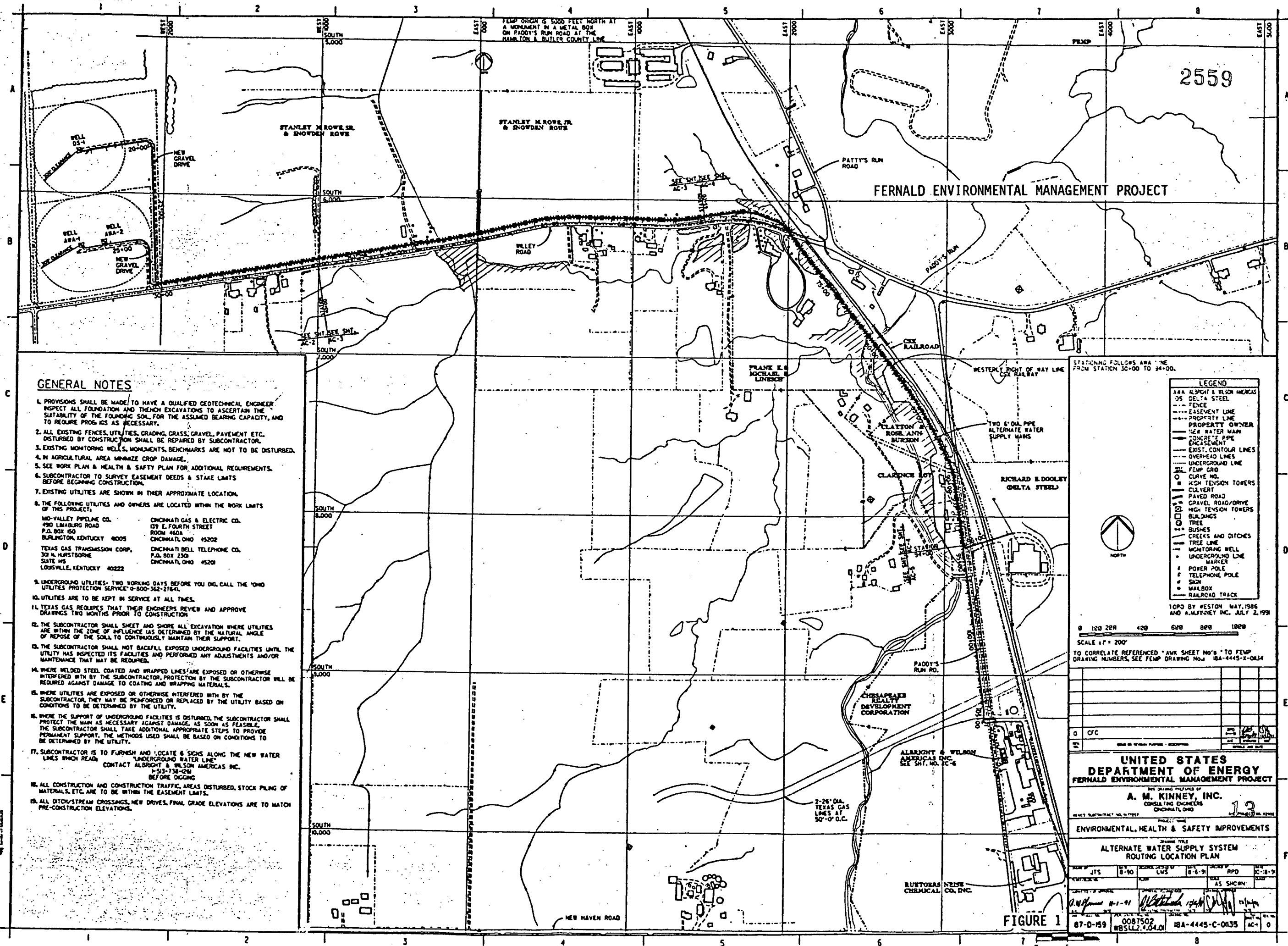
The South Groundwater Contaminated Plume Removal Action will be conducted according to requirements of the overall quality assurance program at the FEMP which is described in the site Quality Assurance Plan, FEMP 2139. The Quality Assurance Plan is based on the criteria specified in ASME NQA-1, Federal EPA Guideline QAMS-005/80 and DOE Orders 5700.6 and 5400.1. Specific quality assurance requirements will be incorporated into written and approved procedures and into personnel training. The FEMP will conduct periodic surveillance to verify compliance with QAP.

Ohio EPA will approve the well siting and will verify water quality of the test well.

The DOE will obtain a nationwide permit if required by the U.S. Army Corps of Engineers pursuant to 33 CFR Part 330 for Part 1 stream crossings.

The DOE will register the alternate water supply wells with the Ohio Department of Natural Resources, Division of Water in regard to water well facilities with the capacity to withdraw more than 100,000 gpd as stated in Ohio Revised Code 1521.16.

The DOE will obtain a Water Permit to Install for the alternate water supply systems from the State.



GENERAL NOTES

- PROVISIONS SHALL BE MADE TO HAVE A QUALIFIED GEOTECHNICAL ENGINEER INSPECT ALL FOUNDATION AND TRENCH EXCAVATIONS TO ASCERTAIN THE SATISFACTORY OF THE FOUNDING SOIL FOR THE ASSUMED BEARING CAPACITY, AND TO REQUIRE PROLOGS AS NECESSARY.
- ALL EXISTING FENCES, UTILITIES, GRADING, GRASS, GRAVEL, PAVEMENT ETC. DISTURBED BY CONSTRUCTION SHALL BE REPAIRED BY SUBCONTRACTOR.
- EXISTING MONITORING BELLS, MONUMENTS, BENCHMARKS ARE NOT TO BE DISTURBED.
- IN AGRICULTURAL AREA MINIMIZE CROP DAMAGE.
- SEE WORK PLAN & HEALTH & SAFETY PLAN FOR ADDITIONAL REQUIREMENTS.
- SUBCONTRACTOR TO SURVEY EASEMENT DEEDS & STAKE LIMITS BEFORE BEGINNING CONSTRUCTION.
- EXISTING UTILITIES ARE SHOWN IN THEIR APPROXIMATE LOCATION.
- THE FOLLOWING UTILITIES AND OWNERS ARE LOCATED WITHIN THE WORK LIMITS OF THIS PROJECT:

| | |
|--|--|
| MID-VALLEY PIPELINE CO. 490 LINBURG ROAD P.O. BOX 150 BURLINGTON, KENTUCKY 40005 | CINCINNATI GAS & ELECTRIC CO. 139 E. FOURTH STREET ROOM 460A CINCINNATI, OHIO 45202 |
| TEXAS GAS TRANSMISSION CORP. 301 N. HURSTBORNE SUITE 105 LOUISVILLE, KENTUCKY 40222 | CINCINNATI BELL TELEPHONE CO. P.O. BOX 2301 CINCINNATI, OHIO 45201 |
- UNDERGROUND UTILITIES - TWO WORKING DAYS BEFORE YOU DIG, CALL THE "OHIO UTILITIES PROTECTION SERVICE" 1-800-362-2764.
- UTILITIES ARE TO BE KEPT IN SERVICE AT ALL TIMES.
- TEXAS GAS REQUIRES THAT THEIR ENGINEERS REVIEW AND APPROVE DRAWINGS TWO MONTHS PRIOR TO CONSTRUCTION.
- THE SUBCONTRACTOR SHALL SHEET AND SHOR ALL EXCAVATION WHERE UTILITIES ARE WITHIN THE ZONE OF INFLUENCE (AS DETERMINED BY THE NATURAL ANGLE OF REPOSE OF THE SOIL) TO CONTINUOUSLY MAINTAIN THEIR SUPPORT.
- THE SUBCONTRACTOR SHALL NOT BACKFILL EXPOSED UNDERGROUND FACILITIES UNTIL THE UTILITY HAS INSPECTED ITS FACILITIES AND PERFORMED ANY ADJUSTMENTS AND/OR MAINTENANCE THAT MAY BE REQUIRED.
- WHERE WELDED STEEL COATED AND WRAPPED LINES ARE EXPOSED OR OTHERWISE INTERFERED WITH BY THE SUBCONTRACTOR, PROTECTION BY THE SUBCONTRACTOR WILL BE REQUIRED AGAINST DAMAGE TO COATING AND WRAPPING MATERIALS.
- WHERE UTILITIES ARE EXPOSED OR OTHERWISE INTERFERED WITH BY THE SUBCONTRACTOR, THEY MAY BE REINFORCED OR REPLACED BY THE UTILITY BASED ON CONDITIONS TO BE DETERMINED BY THE UTILITY.
- WHERE THE SUPPORT OF UNDERGROUND FACILITIES IS DISTURBED, THE SUBCONTRACTOR SHALL PROTECT THE SAME AS NECESSARY AGAINST DAMAGE, AS SOON AS FEASIBLE, THE SUBCONTRACTOR SHALL TAKE ADDITIONAL APPROPRIATE STEPS TO PROVIDE PERMANENT SUPPORT. THE METHODS USED SHALL BE BASED ON CONDITIONS TO BE DETERMINED BY THE UTILITY.
- SUBCONTRACTOR IS TO FURNISH AND LOCATE 6" SIGNS ALONG THE NEW WATER LINES WHICH READ:
"UNDERGROUND WATER LINE"
CONTACT ALBRIGHT & WILSON AMERICAS INC.
1-513-738-0201
BEFORE DIGGING
- ALL CONSTRUCTION AND CONSTRUCTION TRAFFIC AREAS DISTURBED, STOCK PILING OF MATERIALS, ETC. ARE TO BE WITHIN THE EASEMENT LIMITS.
- ALL DITCH/STREAM CROSSINGS, NEW DROVES, FINAL GRADE ELEVATIONS ARE TO MATCH PRE-CONSTRUCTION ELEVATIONS.

LEGEND

- AAA ALBRIGHT & WILSON AMERICAS
- DE DELTA STEEL
- FENCE
- EASEMENT LINE
- PROPERTY LINE
- PROPERTY OWNER
- NEW WATER MAIN
- CONCRETE PIPE
- EASEMENT
- EXIST. CONTOUR LINES
- OVERHEAD LINES
- UNDERGROUND LINE
- FEMP GRID
- CLAVE NO.
- HIGH TENSION TOWERS
- CULVERT
- PAVED ROAD
- GRAVEL ROAD/DRIVE
- HIGH TENSION TOWERS
- BUILDINGS
- TREE
- BUSHES
- CREEKS AND DITCHES
- TREE LINE
- MONITORING WELL
- UNDERGROUND LINE
- MARKER
- POWER POLE
- TELEPHONE POLE
- SMN
- MAILBOX
- RAILROAD TRACK

100% BY WESTON MAY 1986
AND AMERSON INC. JULY 2, 1991

0 100 200 400 600 800 1000
SCALE 1" = 200'

TO CORRELATE REFERENCED "AMR" SHEET NO'S TO FEMP
DRAWING NUMBERS, SEE FEMP DRAWING NO. 18A-4445-K-0034

**UNITED STATES
DEPARTMENT OF ENERGY**

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

DESIGNED AND DRAWN BY
A. M. KINNEY, INC.
CONSULTING ENGINEERS
CINCINNATI, OHIO

PROJECT NO. 13

ENVIRONMENTAL, HEALTH & SAFETY IMPROVEMENTS

ROUTING LOCATION PLAN

DATE: 8-1-91
BY: [Signature]
CHECKED: [Signature]
APPROVED: [Signature]

87-0-159 0087502 WBSLL2.4.04.01 18A-4445-C-0035 AC-1 0

Chemical Parameters for Part 1

Water Quality

Analysis of the samples taken in support of Part 1 will include the following chemical parameters:

| | |
|----------------------|-------------------|
| Uranium | Total Iron |
| Specific Conductance | Sodium |
| Sulfate and Sulfite | Total Phosphate |
| Chloride | Total Silica |
| Total Hardness | Alkalinity |
| Calcium Hardness | Water Quantity |
| Magnesium Hardness | Water Pressure |
| Total Copper | Water Temperature |
| pH | |

ATTACHMENT I

Pre-Excavation Field Screening & Soil Sampling and Analysis Plan

New Attachment to the Work Plan

1.0 Introduction

As part of the Engineering Evaluation and Cost Analysis (EE/CA), an alternate water supply will be provided to two affected industrial users, Delta Steel and Albright & Wilson Americas Inc. (AWA), located within the south plume area. A total of three groundwater supply wells and two piezometers are proposed to be installed in a well site (approximate dimensions of 820 feet by 1250 feet) located northeast of the intersection of Willey and Crosby Roads. Groundwater will be pumped from this well site through two distinct underground supply pipelines (one line for each industrial user). The supply pipelines will be installed in a trench approximately five feet deep, parallel to the north side of Willey Road heading east from the well site, thence southeast along the western toe of an elevated railroad embankment, thence southeast along the southwest toe of an elevated railroad embankment, thence south along the west edge of Paddy's Run Road to each of the affected industrial users.

Pre-excavation soil sampling, field screening, and analysis (if warranted) is proposed to: 1) identify contaminants in areas where personnel may be exposed to hazardous substances during construction activities, so that appropriate health and safety measures can be taken to protect the workers; and 2) provide data to determine if additional investigations, under Fernald Environmental Management Project (FEMP) or Paddy's Run Road Site (PRRS) Remedial Investigation/Feasibility Study (RI/FS) activities, are warranted.

2.0 Sample Areas/Identification of Contaminants

The alternate water supply system will be constructed in non-suspect area (from the well site to the northwest bank of Paddy's Run and the southeast bank of Paddy's Run to the AWA Facility property boundary and effluent drainage ditch) and suspect area (Paddy's Run streambed, the AWA Facility property, and localities exhibiting evidence of distressed vegetation, stains, or dumping/fill), see Figure I-1. Soils in the non-suspect area are expected to be free of contamination. Soils in the Paddy's Run streambed are suspect as a result of contaminant migration by stormwater runoff from the FEMP to Paddy's Run. Also, a variety of chemical, (volatiles, semi-volatiles, pesticides/herbicides), inorganic, and metal contaminants are suspect as a result of past activities by the potentially responsible parties, (PRPs) namely AWA, Mobil Mining and Minerals Co., and Ruetgers Nease Chemical Co., Inc., for the PRRS.

3.0 Sample Extraction and Analysis

Sample point locations will be established along the pipeline easement centerline as follows: 1) at 500-foot intervals within the non-suspect areas, 2) adjacent to the northwest and southeast banks of Paddy's Run (as indicated on Figure I-1), and 3) within the drainage ditch on the AWA Facility property (as indicated on Figure I-1). The centerline of the pipeline easement is assumed to represent the centerlines for both pipeline trench excavations. In actual construction, the centerlines for the pipeline trench excavations will be approximately three feet on either side and parallel to the centerline of the pipeline easements.

Soil samples will be collected, using a stainless steel hand auger, at one-foot intervals from the ground surface to an approximate total depth of five feet below surface grade at each sample point location described previously. Each soil sample will be field-screened for qualitative determinations of volatile organic and radiological contaminant concentrations. If warranted, based on field screening data, selected soil samples will be retained for laboratory analyses to quantify volatile organic and radiological contaminant concentrations for selection of the appropriate personal protective equipment (PPE) during construction activities.

A portion of each soil sample will be retained in clean glass jars sealed with aluminum foil lids for field screening of volatile organic compounds using a photoionization detector (PID) or a flame-ionization detector (FID). The soil samples will be retained at approximately 60 degrees Fahrenheit for a period of at least 15 minutes for volatilization of the organic compounds prior to PID or FID measurement. Soil samples exhibiting PID or FID readings of greater than 5 meter units above background, or the soil sample exhibiting the greatest PID/FID reading per sample point location (if multiple samples at a given sample point location exceed 5 meter units above background) will be retained in glass jars, sealed with Teflon-lined Closures (TLC), and analyzed for the following contaminants:

Non-Suspect Areas

Total Volatiles - Benzene, Ethylbenzene, Toluene, and Xylenes.

Total Semi-Volatiles - all analytes for this category.

Total Pesticides/Herbicides - all analytes for this category.

Total Metals - Arsenic, Barium, Chromium, and Lead.

Suspect Area - Paddy's Run Streambed

HSL Volatiles - Benzene, Ethylbenzene, Toluene, Xylenes, 1,1,1-Trichloroethane, 1,1-Dichloroethane, and 1,2-Dichloroethane.

HSL Semi-Volatiles - all analytes listed for this category.

HSL Inorganics - Arsenic, Barium, Chromium, Lead, Sodium, and Potassium.

HSL Pesticides/PCBs - all analytes listed for this category.

Suspect Area - AWA Facility and Drainage Ditch *

HSL Semi-Volatiles - all analytes listed for this category.

HSL Inorganics - Arsenic, Sodium, and Potassium.

HSL Pesticides/PCBs - all analytes listed for this category.

Additional Analytes - Ammonia, Phosphates, and Sulfates.

Note: * - Based on information supplied by ERM-Midwest, consultant to the PRRS facilities.

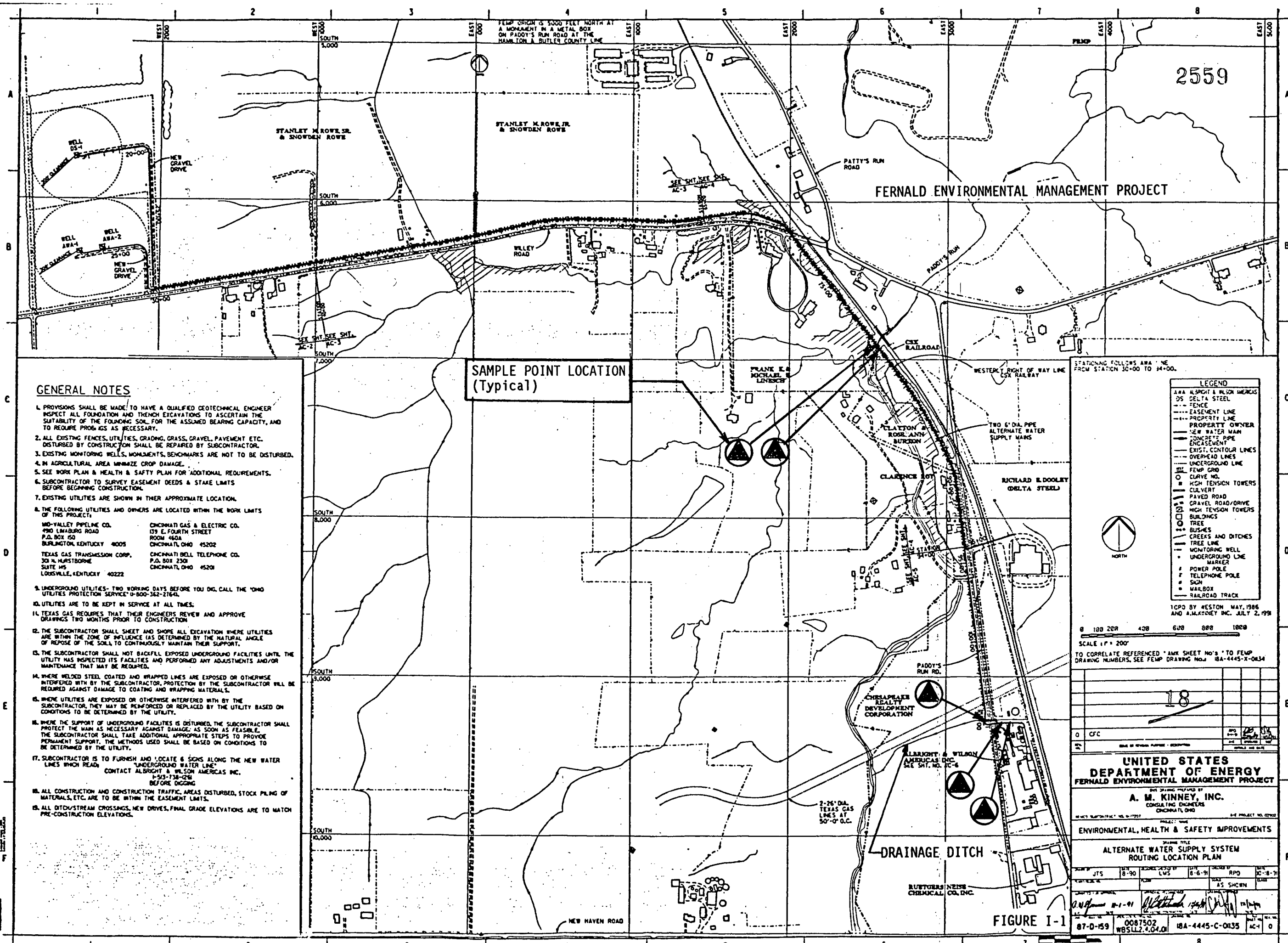
Each soil sample will also be field screened for radiological contaminants using portable radiation detection devices. Soil samples exhibiting detectable alpha readings or beta/gamma readings exceeding 100 counts per minute above background, or the soil sample exhibiting the greatest radiation detection reading per sample point location (if multiple samples at a given sample point location exceed the previous mentioned criteria) will be retained in glass or plastic jars for total/isotopic uranium, total/isotopic thorium, and potassium-40 analyses.

Analytical data to be used for evaluation of worker health and safety should be obtained in the most expedient manner possible (i.e., would not require full CLP sampling/analytical protocols). If warranted, split samples may be collected at each suspect area sample point location. One portion will be sent to a designated laboratory for EPA Level 3 analyses. The remainder will be sent to an EPA approved laboratory for analyses in accordance with CLP analytical protocols.

If soil analyses are warranted, trip and rinsate blanks will be collected for Quality Assurance/Quality Control (QA/QC) purposes. Trip and rinsate blanks will accompany each set of samples shipped to the appropriate designated laboratory. The QA/QC samples will be analyzed for the respective analytes previously mentioned.

Excess soil boring cuttings will be returned to their respective sample point location borehole. The remainder of the borehole annulus will be backfilled with bentonite pellets as the annular seal. The location of the borehole will be noted.

The work to be performed and outlined in the pre-excavation field screening & soil sampling and analysis plan will be accomplished in accordance with the Health and Safety Plan for the South Groundwater Contamination Plume Removal Action, Part 1.



GENERAL NOTES

1. PROVISIONS SHALL BE MADE TO HAVE A QUALIFIED GEOTECHNICAL ENGINEER INSPECT ALL FOUNDATION AND TRENCH EXCAVATIONS TO ASCERTAIN THE SUITABILITY OF THE FOUNDING SOIL FOR THE ASSUMED BEARING CAPACITY, AND TO REQUIRE PROGRS AS NECESSARY.
2. ALL EXISTING FENCES, UTILITIES, GRADING, GRASS, GRAVEL, PAVEMENT ETC. DISTURBED BY CONSTRUCTION SHALL BE REPAIRED BY SUBCONTRACTOR.
3. EXISTING MONITORING WELLS, MONUMENTS, BENCHMARKS ARE NOT TO BE DISTURBED.
4. IN AGRICULTURAL AREA MINIMIZE CROP DAMAGE.
5. SEE WORK PLAN & HEALTH & SAFETY PLAN FOR ADDITIONAL REQUIREMENTS.
6. SUBCONTRACTOR TO SURVEY EASEMENT DEEDS & STAKE LIMITS BEFORE BEGINNING CONSTRUCTION.
7. EXISTING UTILITIES ARE SHOWN IN THEIR APPROXIMATE LOCATION.
8. THE FOLLOWING UTILITIES AND OWNERS ARE LOCATED WITHIN THE WORK LIMITS OF THIS PROJECT:

| | |
|--|--|
| MID-VALLEY PIPELINE CO. 490 LINABURG ROAD P.O. BOX 150 BURLINGTON, KENTUCKY 40005 | CINCINNATI GAS & ELECTRIC CO. 139 E. FOURTH STREET ROOM 460A CINCINNATI, OHIO 45202 |
| TEXAS GAS TRANSMISSION CORP. 301 N. HURSTBORNE SUITE 145 LOUISVILLE, KENTUCKY 40222 | CINCINNATI BELL TELEPHONE CO. P.O. BOX 2301 CINCINNATI, OHIO 45201 |
9. UNDERGROUND UTILITIES - TWO WORKING DAYS BEFORE YOU DIG, CALL THE "OHIO UTILITIES PROTECTION SERVICE" 1-800-362-2164.
10. UTILITIES ARE TO BE KEPT IN SERVICE AT ALL TIMES.
11. TEXAS GAS REQUIRES THAT THEIR ENGINEERS REVIEW AND APPROVE DRAWINGS TWO MONTHS PRIOR TO CONSTRUCTION.
12. THE SUBCONTRACTOR SHALL SHEET AND SHORE ALL EXCAVATION WHERE UTILITIES ARE WITHIN THE ZONE OF INFLUENCE (AS DETERMINED BY THE NATURAL ANGLE OF REPOSE OF THE SOIL) TO CONTINUOUSLY MAINTAIN THEIR SUPPORT.
13. THE SUBCONTRACTOR SHALL NOT BACKFILL EXPOSED UNDERGROUND FACILITIES UNTIL THE UTILITY HAS INSPECTED ITS FACILITIES AND PERFORMED ANY ADJUSTMENTS AND/OR MAINTENANCE THAT MAY BE REQUIRED.
14. WHERE WELDED STEEL COATED AND WRAPPED LINES ARE EXPOSED OR OTHERWISE INTERFERED WITH BY THE SUBCONTRACTOR, PROTECTION BY THE SUBCONTRACTOR WILL BE REQUIRED AGAINST DAMAGE TO COATING AND WRAPPING MATERIALS.
15. WHERE UTILITIES ARE EXPOSED OR OTHERWISE INTERFERED WITH BY THE SUBCONTRACTOR, THEY MAY BE REINFORCED OR REPLACED BY THE UTILITY BASED ON CONDITIONS TO BE DETERMINED BY THE UTILITY.
16. WHERE THE SUPPORT OF UNDERGROUND FACILITIES IS DISTURBED, THE SUBCONTRACTOR SHALL PROTECT THE MAIN AS NECESSARY AGAINST DAMAGE. AS SOON AS FEASIBLE, THE SUBCONTRACTOR SHALL TAKE ADDITIONAL APPROPRIATE STEPS TO PROVIDE PERMANENT SUPPORT. THE METHODS USED SHALL BE BASED ON CONDITIONS TO BE DETERMINED BY THE UTILITY.
17. SUBCONTRACTOR IS TO FURNISH AND LOCATE & SIGN ALONG THE NEW WATER LINES WHICH READ:
CONTACT ALBRIGHT & WILSON AMERICAS INC.
P-513-738-020
BEFORE DIGGING
18. ALL CONSTRUCTION AND CONSTRUCTION TRAFFIC AREAS DISTURBED, STOCK PILING OF MATERIALS, ETC. ARE TO BE WITHIN THE EASEMENT LIMITS.
19. ALL DITCH/STREAM CROSSINGS, NEW DRIVES, FINAL GRADE ELEVATIONS ARE TO MATCH PRE-CONSTRUCTION ELEVATIONS.

- LEGEND**
- AREA ALBRIGHT & WILSON AMERICAS
 - DS DELTA STEEL
 - FENCE
 - EASEMENT LINE
 - PROPERTY LINE
 - PROPERTY OWNER
 - NEW WATER MAIN
 - CONCRETE PIPE
 - ENCASEMENT
 - EXIST. CONTOUR LINES
 - OVERHEAD LINES
 - UNDERGROUND LINE
 - FEMP GRID
 - CLUTVE NO.
 - HIGH TENSION TOWERS
 - CLUTVERT
 - PAVED ROAD
 - GRAVEL ROAD/DRIVE
 - HIGH TENSION TOWERS
 - BUILDINGS
 - TREE
 - BUSHES
 - CREEKS AND DITCHES
 - TREE LINE
 - MONITORING WELL
 - UNDERGROUND LINE
 - MARKER
 - POWER POLE
 - TELEPHONE POLE
 - SIGN
 - MAILBOX
 - RAILROAD TRACK



SCALE 1" = 200'

TO CORRELATE REFERENCED "AMK SHEET NO'S" TO FEMP DRAWING NUMBERS, SEE FEMP DRAWING NO. 18A-4445-X-0434

| |
|---------------------------|
| 18 |
| 0 CFC |
| DATE OF REVIEW: 10/1/91 |
| DATE OF REVISION: 10/1/91 |

**UNITED STATES
DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT**

DESIGNED BY
A. M. KINNEY, INC.
CONSULTING ENGINEERS
CINCINNATI, OHIO

PROJECT NAME
ENVIRONMENTAL, HEALTH & SAFETY IMPROVEMENTS

DRAWING TITLE
**ALTERNATE WATER SUPPLY SYSTEM
ROUTING LOCATION PLAN**

| | | | | |
|---------|---------|---------|---------|---------|
| DATE | DATE | DATE | DATE | DATE |
| JTS | 8-90 | LWS | 8-6-91 | RPO |
| DATE | DATE | DATE | DATE | DATE |
| 10-1-91 | 10-1-91 | 10-1-91 | 10-1-91 | 10-1-91 |

FIGURE I-1
87-0-159 0087502 18A-4445-C-0135 AC 0